



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/692,823	10/27/2003	Tatsuya Fukunaga	117599	9665
25944	7590	03/09/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			LEE, BENNY T	
			ART UNIT	PAPER NUMBER
			2817	

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

FILED DATE:

BEST AVAILABLE COPY

- ☒ This application has been examined ☐ Responsive to communication filed on _____ ☐ This action is made final.

A shortened statutory period for response to this action is set to expire Three (3) month(s), _____ days from the date of this letter.
Failure to respond within the period for response will cause the application to become abandoned. 35 U.S.C. 133

Part I THE FOLLOWING ATTACHMENT(S) ARE PART OF THIS ACTION:

- | | |
|---|---|
| 1. <input checked="" type="checkbox"/> Notice of References Cited by Examiner, PTO-892. | 2. <input type="checkbox"/> Notice re Patent Drawing, PTO-948. |
| 3. <input checked="" type="checkbox"/> Notice of Art Cited by Applicant, PTO-1449. | 4. <input type="checkbox"/> Notice of Informal Patent Application, Form PTO-152 |
| 5. <input type="checkbox"/> Information on How to Effect Drawing Changes, PTO-1474. | 6. <input type="checkbox"/> _____ |

Part II SUMMARY OF ACTION

1. ☒ Claims 1-8 are pending in the application.
Of the above, claims _____ are withdrawn from consideration.
2. ☐ Claims _____ have been cancelled.
3. ☐ Claims _____ are allowed.
4. ☒ Claims 1-8 are rejected.
5. ☐ Claims _____ are objected to.
6. ☐ Claims _____ are subject to restriction or election requirement.
7. ☐ This application has been filed with informal drawings under 37 C.F.R. 1.85 which are acceptable for examination purposes.
8. ☐ Formal drawings are required in response to this Office action.
9. ☐ The corrected or substitute drawings have been received on _____ Under 37 C.F.R. 1.84 these drawings are ☐ acceptable; ☐ not acceptable (see explanation or Notice re Patent Drawing, PTO-948).
10. ☐ The proposed additional or substitute sheet(s) of drawings, filed on _____ has (have) been ☐ approved by the examiner; ☐ disapproved by the examiner (see explanation).
11. ☐ The proposed drawing correction, filed _____, has been ☐ approved; ☐ disapproved (see explanation).
12. ☒ Acknowledgement is made of the claim for priority under U.S.C. 119. The certified copy has ☒ been received ☐ not been received ☐ been filed in parent application, serial no. _____; filed on _____.
13. ☐ Since this application appears to be in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11; 453 O.G. 213.
14. ☐ Other

The disclosure is objected to because of the following informalities: Page 1, 10th line from bottom note that --signal-- should follow "frequency" for clarity of description ;last two lines, note that the sequence "S1 to S5" should be rewritten as --S1, S2, S3, S4 and S5-- for consistency with figs. 18A, 18B. Page 9, line 16, and page 10, line 10, note that the respective sequences "16A to 16C" and "24A to 24C" should be correspondingly rewritten as --16A, 16B and 16C-- and --24A, 24B and 24C-- for consistency with these drawing figures. Page 16, line 3, note that "on assumption of" should be written as --assuming-- for a better characterization. Page 21, line 7, note that "almost" should be rewritten as --approximately-- and "as a whole" should be deleted to provide a better characterization. Page 23, line 3, note that "15 to 17" should be rephrased as --15, 16A, 16B, 16C, and 17-- for consistency with the drawing figures. Appropriate correction is required.

The disclosure is objected to because of the following informalities: For the specification's description of each drawing figure, note that all reference labels therein should be correspondingly described relative to that figure's specification description. For the description of multiple figures (e.g. figs. 1-3, 15, 16A, 16B, 16C, 17, etc) the reference labels therein should be reference to those drawing figures in which they actually appear (unless they appear in each one of the multiple figures). Appropriate correction is required.

The drawings are objected to because of the following: In figs. 10A, 10B, 18A, 18B, 19, 20A, 20B, 21A, 21B, 22A, 22B, should these drawing figures be properly designed as --RELATED ART--?. Corrected drawing sheets in compliance with 37 CFR

1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claims 1-6, 7, 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 1, 7, note that it is unclear what characterizes "the stacking direction side". Clarification is needed.

In claim 4, note that it is unclear how a "plurality of propagation regions" recited herein relates to the single "region" as recited in claim 1, from which this claim directly depends.

In claims 4, 5, note that it is unclear how a "magnetic field" recited herein relates to "magnetic fields" as recited in claim 1.

In claim 6, note that it is unclear how a "multiple mode" recited herein relates to "another mode" as recited in claim 1, from which this claim directly depends.

The following claims have been found objectionable for reasons set forth below:

In claim 1, fourth paragraph; claim 7, second paragraph; claim 8, first paragraph: note that --said-- should follow "bringing" and "electromagnetic waves" should be rephrased as --wherein electromagnetic waves in said another mode-- for a proper characterization.

In claims 1, 7, 8, last paragraph of each claim, note that "and that of" should be rephrased as --and the direction of-- for a proper characterization.

In claim 3, note that "formed by partially opening...." should be rephrased to avoid the inappropriate method connotation.

In claims 5, 6, note that --said-- should precede "electromagnetic waves" for a proper characterization.

In claim 7, line 2, note that "of" should be rewritten as --comprising-- for a proper characterization.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 3, 6, 7, 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanford et al in view of Uchimura et al.

Sanford et al (Fig. 3) discloses a mode converting structure usable as an RF module comprising: a first coplanar waveguide (16) operating in a TEM mode; a second waveguide (28) operating in another (i.e. non-TEM) mode. Note that the second waveguide is preferably disclosed as having a hollow waveguide region with metal walls, but may take alternative forms such as a waveguide region with a dielectric interior (see col. 2, ls 53-54). Note that a slot or opening (34) is provided in one of the vertically stacked (i.e., upper/lower) metal walls of the waveguide through which the coplanar waveguide passes through and is in direct contact therewith to provide electromagnetic coupling between the coplanar waveguide (16) and the waveguide (28). Furthermore, note that by virtue of the coupling through the vertically oriented metal walls, (which corresponds to the claimed coupling configuration) the magnetic field in the coplanar waveguide inherently matches with the magnetic field in waveguide (28), as would have been recognized by those of ordinary skill in the art. However, the waveguide (28) of Sanford et al does not disclose the stacking layers being grounding electrodes as claimed.

Uchimura et al provides an exemplary teaching of a waveguide configuration comprised of a propagation region having stacked dielectric and conductive layers including opposing stacked upper and lower grounding layers. As described at col. 1, ls 23-25 and ls. 32-37, hollow metal waveguides are large in size at the operating

frequencies in Uchimura et al as compared to dielectric body waveguide structures which provide the benefit of reduced size at the same operating frequency.

Accordingly, it would have been obvious to have modified the waveguide (28) in Sanford et al to have been a multi-layered stacked dielectric waveguide of the type exemplarily taught by Uchimura et al. Such a modification would have been obviously suggested by the teaching in Sanford et al that alternative types of waveguides (e.g. dielectric region instead of hollow region) would have been usable in conjunction with the teaching in Uchimura et al that dielectric waveguides provide the benefit of reduced size as compared to hollow waveguides at the same operating frequency, thereby suggesting the obviousness of such a modification.

Regarding claims 2, 6, note that the selecting of propagating modes (e.g. TE, etc) would have been considered an obvious optimization of general operating conditions in the waveguide. As known to those of ordinary skill in the art the dimensioning of the waveguide dictates the type of mode(s) which would propagate within the waveguide.

Claims 1, 4, 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanford et al in view of Takenoshita et al.

Sanford et al discloses the claimed invention except for the second waveguide being a stacked waveguide with grounding layers and plural branched propagating regions.

Takenoshita et al discloses a stacked dielectric waveguide configuration with opposing upper lower grounding layers. Moreover, the waveguide provides for plural

Art Unit: 2817

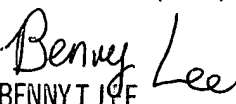
branched propagating regions. Moreover, Takenoshita et al also recognizes that a reduced size waveguide structure (as compared to a hollow waveguide) can be obtained using a dielectric waveguide structure.

Accordingly, it would have been obvious to have modified the hollow waveguide structure (28) of Sanford et al to have been a dielectric waveguide structure taught by Takenoshita et al. Such a modification would have been obvious for the same reasons as set forth in the preceding rejection. Note that as an obvious consequence of such a modification, the resultant dielectric structure would have included plural branched propagating regions.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Weinreb et al pertains to a coplanar waveguide to hollow waveguide transition similar to that in Sanford et al.

Any inquiry concerning this communication should be directed to Benny Lee at telephone number (571) 272-1764.


BENNY T. LEE
PRIMARY EXAMINER
ART UNIT 2817

B. Lee/ds

03/05/05.